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EDUCATIONAL PROGRAMS IN VIRGINIA FOR FIELDS RELATED TO HEALTH.

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FOR EACH OF 18 HEALTH RELATED OCCUPATIONS, THE REPORT IDENTIFIES MAJOR NEEDS, OUTLINES THE RELEVANT EDUCATIONAL PROGRAM, AND RECOMMENDS ACTION. COMMENTS GO BEYOND EDUCATIONAL PROGRAMS ALONE, FOR IN SOME FIELDS THE PROBLEM FOR VIRGINIA IS NOT HOW TO EDUCATE MORE STUDENTS BUT HOW TO RETAIN MORE GRADUATES IN THE STATE. THE STUDY COMMITTEE RECOMMENDS THAT THE COMMUNITY COLLEGES HAVE AN ACTIVE ROLE IN PREFROFESSIONAL EDUCATION FOR THE HEALTH OCCUPATIONS REQUIRING A BACHELOR'S OR HIGHER DEGREE AND IN PREPARATION OF DENTAL ASSISTANTS, DIETARY AIDES, AND PHYSICAL THERAPY AIDES. TO ASSIST IN RELIEVING THE CRITICAL SHORTAGE OF REGISTERED NURSES, AS COMMUNITY COLLEGES ARE ORGANIZED, THEY SHOULD INCLUDE ASSOCIATE IN ARTS DEGREE NURSING PROGRAMS. (WO)

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EDUCATIONAL PROGRAMS IN VIRGINIA FOR FIELDS RELATED TO HEALTH

Staff Report #6

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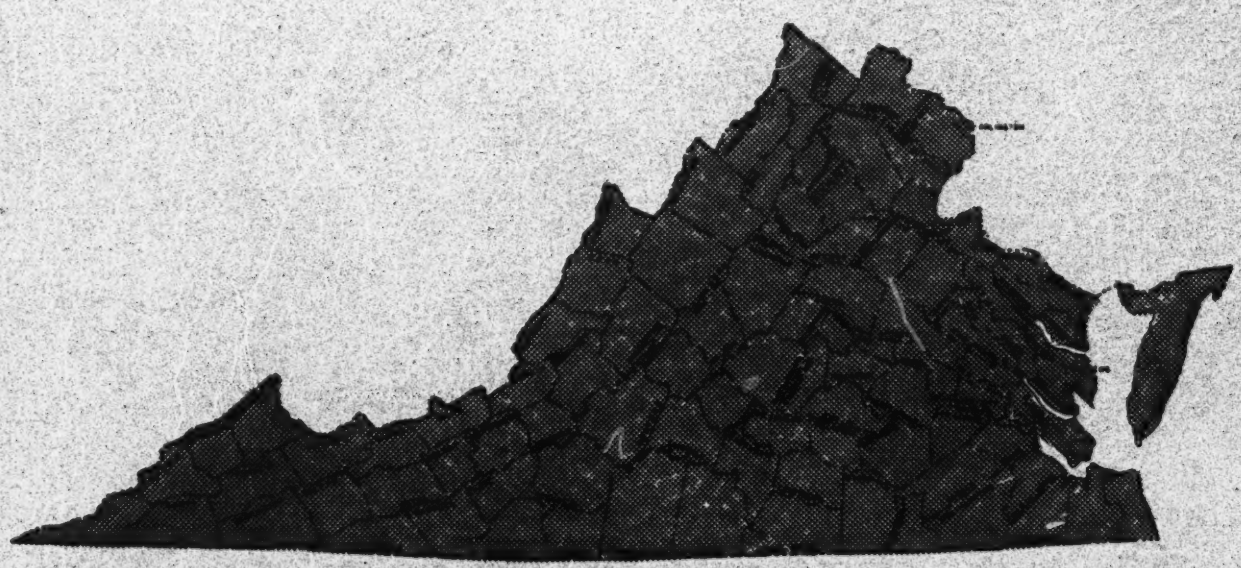

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Staff Report #6

EDUCATIONAL PROGRAMS IN VIRGINIA FOR FIELDS RELATED TO HEALTH

By William J. McGlothlin
Vice-President
University of Louisville

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RICHMOND, VIRGINIA
1965

FOREWORD

The Virginia General Assembly in 1964, under Senate Joint Resolution No. 30, authorized the Governor to appoint a Commission on Higher Education, and directed the Commission "...to undertake a comprehensive study and review of higher education, to be used as a basis for effective long-range planning as to objectives, needs, and resources of public and private higher education in the Commonwealth of Virginia." The members appointed to the Commission are listed on the title page of this volume. The Commission selected a staff for carrying on the Study and approved an outline of the topics to be covered. Several of these topics required the collection and interpretation of extensive data; the detailed analyses of problems led, in many cases, to suggestions for their solution. The results of these detailed studies, prepared by staff members and consultants, are published as Staff Reports, to make the information generally available.

Early in the plans of the Higher Education Study Commission it was agreed that a special report would be needed on the programs for preparing personnel in the professions and occupations associated with health and medical care. The situation in nursing education, for example, was repeatedly called to the attention of the Commission and its staff, and other areas also seemed to have problems. Arrangement was therefore made with Mr. William J. McGlothlin, Vice President of the University of Louisville, to make this special study. Staff Report #6, which is published herewith, presents his analysis of the situation in Virginia.

Mr. McGlothlin has unusual qualifications for the Study he has completed in Virginia. He was for some time on the staff of the Southern Regional Education Board. He is widely known as a specialist on education for the professions, and one of his latest books is on that subject. The Commission

on Higher Education considers that it is fortunate in having secured Mr. McGlothlin for this part of its total investigation.

Staff Report #6 reviews, in alphabetical order, some 18 professions and occupations associated with health and medical care. As explained on the first page of this Report, medicine and dentistry are not studied in this Report. At the conclusion of each section Mr. McGlothlin makes recommendations for action concerning programs of preparation.

Mr. McGlothlin made extensive visits throughout Virginia to gather material and to get first hand impressions of the situation. He interviewed a large number of interested persons; the list of those he interviewed is available in the files of the Higher Education Study Commission. To these people thanks are due for the information and points of view that were provided. Special thanks are also due to Miss Mabel E. Montgomery of the State Board of Examiners of Nurses, who was asked to read Mr. McGlothlin's section on "Nurses" to check the accuracy of the statistics there. Particular recognition should be given to the valuable assistance furnished by the staff members of the Virginia Council on Health and Medical Care. Mrs. Cynthia Warren of that agency was most helpful in arranging contacts and appointments for Mr. McGlothlin and in providing statistical data from reliable sources.

A sub-committee of the Higher Education Study Commission, appointed by the Chairman, gave careful consideration to the draft of Staff Report #6, and then met with the author for a critical review of the text and the recommendations. Staff Report #6, as here presented, includes modifications subsequently made by the author in the interest of clarifying the text and providing further support to the recommendations.

The text of Staff Report #6 presents only the findings and recommendations of the author, Mr. McGlothlin. The Report has been reviewed by the Higher Education Study Commission, but the release of the Report does not imply an endorsement by the Commission of any suggestions and recommendations herein contained. One member of the Commission has prepared a statement dissenting from one of the author's recommendations, appearing on page 32. This dissenting opinion is filed in the records of the Higher Education Study Commission.

John Dale Russell
Director of the Study

TABLE OF CONTENTS

	Page
Foreword (by the Director of the Study)	ii
Audiologists and Speech Pathologists	3
Dental Auxiliaries - Hygienists, Assistants, and Technicians	6
Dietitians	10
Hospital Administrators	13
Medical Technologists	15
Nurses	18
Occupational Therapists	35
Pharmacists	38
Physical Therapists	40
Clinical Psychologists	42
Radiologic Technologists	44
Rehabilitation Counselors	46
Sanitarians	48
Social Workers	50
Veterinarians	54

EDUCATIONAL PROGRAMS IN VIRGINIA FOR FIELDS RELATED TO HEALTH

A readily identifiable area in the service of higher education is concerned with the preparation of personnel for professions and occupations related to health. This is a broad area, relating not only to the preparations of doctors, dentists, and pharmacists, but extending into a broad range of services, such as dietitian, physical therapist, and sanitarian. The critical review of higher education in Virginia that has been undertaken by the Higher Education Study Commission must include some detailed analyses of the adequacy of the programs of preparation of the professions and occupations associated with health and medical care.

In the present section of the Study, it was agreed, after a preliminary examination of the data, not to include a detailed analysis of preparation for practice in medicine and dentistry. Virginia seems to be reasonably well served by its two medical schools and its one dental school, all under state control and support. Furthermore, an intensive investigation in these two highly complex professional fields would have required much more time than has been available in the present schedule of the Higher Education Study Commission. If there is evidence later that there are unmet needs in medicine and dentistry in Virginia, a special study should be organized to deal with such a problem.

For each of the fields studied, Staff Report #6 identifies major needs, outlines the relevant educational program, and recommends action. Comments and recommendations go beyond educational programs alone, for in some fields the problem for Virginia is not how to educate more students but how to

retain more of its graduates.

Much of the information which this section contains has been obtained from discussions with nearly 100 knowledgable people. Their names are available in the files of the Higher Education Study Commission. The recommendations, however, are wholly the responsibility of the author, and were reached only after consideration of information obtained from all sources.

The Report is organized into sections, each of which treats one of the occupational specialties in health and medical care. The fields are discussed in alphabetical order.

Audiologists and Speech Pathologists

Audiologists diagnose and treat defects of hearing; speech pathologists diagnose and treat defects of speech. Neither deals directly with purely medical problems, but refers these to physicians. Audiologists and speech pathologists practice in a variety of ways. Of the 150 members of the Virginia Speech and Hearing Association, 55 per cent practice in public school clinics; 13 per cent in clinics operated by voluntary health associations; 10 per cent in colleges and universities; 5 per cent in hospitals; 2 per cent in private practice; and 15 per cent in other sorts of situations.

Needs

The Virginia Speech and Hearing Foundation was incorporated in 1952 as a private non-profit corporation, supported wholly from donations. In 1964, the state appropriated $20,000 to the Foundation for the biennium. With these funds, it purchased a mobile diagnostic unit, and tested 40,000 persons between October 1964 and May 1965. Results were startling. Of those tested, 5 per cent had speech difficulties; 2.5 to 5 per cent had hearing difficulties. Among school children tested, about 2,000 suffered from speech difficulties, and some 1,000 from hearing difficulties. Very few of these children were seeing physicians. If the same percentages hold throughout the state, Virginia has 28,000 school children with speech troubles, and somewhere between 14,000 and 28,000 with hearing difficulties.

The number of professional people to deal with these huge numbers is pitifully small. Only 19 school divisions have speech clinicians, and four of these 19 divisions have 75 per cent of those, out of a total of 77. Since the barest minimum need is for one clinician per division, 177 should

be working. But they cannot be obtained. Salaries, the same as paid teachers, are inadequate to attract the number of clinicians needed.

Outside of the schools there are 12 speech and hearing clinics in the state. Another 25 are needed to cover the state adequately. To staff all these, at least 50 clinicians would be required. They are not at hand.

Virginia has two problems, therefore - it needs more clinicians to staff present programs, and it needs a substantial expansion of programs. Otherwise, as Dr. Ralph Bralley of the University of Virginia puts it, "The child is punished by his birthplace."

Even without any expansion of needed services, ten budgeted vacancies exist - five in schools and five in clinics. The number of graduates in the state is limited, and of this limited number, a good many leave the state. Low salaries are a major factor in this loss.

For example, beginning salaries for clinicians with master's degrees in the schools of Pennsylvania are $6,000 to $6,500 which can increase to $8,000 after 3-6 years. In Lynchburg, Virginia, the beginning salary is $5,100. In the clinics of Ohio, the starting salary is $8,000. In Virginia, it is from $4,500 to $5,500. And there are only two or three positions in the whole State of Virginia which carry a salary of $8,000. State government does not recognize the salary needs of audiologists and speech pathologists. Of all clinicians' salaries in the state, those of the state speech pathologists are the lowest - $4,700 for 12 months.

Program

Five colleges in Virginia participate in educating speech and hearing clinicians. Mary Washington College and Longwood College conduct a three-year program after which students transfer to the University of Virginia

for the fourth year of the bachelor's degree program. Hampton Institute, Old Dominion College, and the University of Virginia provide four-year programs leading to bachelor's degrees. The University of Virginia alone provides a graduate program leading to the master's degree and the Ph.D. degree. The program at the University of Virginia is almost wholly graduate, with 36 graduate and four undergraduate students. It could take 10 to 15 more. Each graduate will receive offers for as many as five jobs.

Recommendations

1. Increase the salaries of clinicians in the schools and clinics until they are equal or better than the salaries for comparable positions in surrounding states.

2. Provide funds to the University of Virginia for scholarships and faculty to increase the number of master's degree graduates from 30 to 40 a year.

3. Add at least 25 more community speech and hearing centers.

4. For a biennium, increase the amount allotted to the Virginia Speech and Hearing Foundation, Inc., to $120,000 or $60,000 a year. This amount would permit the Foundation to cover the state fully in locating cases needing attention. It could use this information to stimulate local communities to establish and operate badly needed treatment centers.

Dental Auxiliaries - Hygienists, Assistants, and Technicians

Dental Assistants

Dental assistants work with the dentist, primarily at chair-side, to make him more productive, so that he can handle more patients with the same effort, in effect increasing the number of dentists. Dental assistants do not work by themselves, or work within the mouth of patients. In the United States, the 72 formal institutional programs for preparing dental assistants graduate approximately 3,600 assistants annually. No such program is operating in Virginia. Annually 12,000 trained dental assistants are needed in the United States to cover the potential needs of the 3,000 dentists graduated annually, and to replace the 9,000 assistants who leave the vocation each year. This minimum figure ignores the needs of dentists who wish to employ more than one assistant, though it is likely that many will wish to do so in the future. To meet the need for some 220,000 trained dental assistants projected by 1980, an increase of 135,700 over the present number, a five-fold increase in the capacity of training programs must be attained.[1]

The American Dental Association certifies dental assistants and approves educational programs of either one or two years in length. The dental assistant is therefore considered a part of the group of skilled persons who are responsible for dental care.

In 1963, there were 1,605 practicing dentists in Virginia. This figure has probably grown to 1,800, counting dentists serving in military installations in Virginia. The rule of thumb is two-thirds of an assistant to one dentist as a ratio defining need. This would mean that Virginia could use 1,200 trained assistants at present.

An accurate count of the number of dental assistants currently working

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[1] U. S. Government Printing Office, Organizing a Dental Assistant Training Program, Washington, D. C., 1965, p. 3.

in Virginia is difficult to obtain. One such estimate by the Virginia Council on Health and Medical Care shows only 557 in full-time employment, less than half the 1,200 needed. Most of these have been trained by individual dentists in offices rather than in any formal program.

A survey made by the Virginia State Dental Association makes it clear that dentists in Virginia would prefer trained assistants. Almost three times as many want assistants trained in a school for dental assistants as want ones only with experience in a dental office.

Dental Hygienists

Dental hygienists are also an accepted part of the group providing dental care. The hygienist is licensed to render parts of dental treatments and to perform such tasks as cleaning teeth, charting mouths, and making x-ray examinations. He or she can work only under general supervision, thereby relieving the dentist of much time-consuming effort. The maximum ratio for hygienists allowed by the American Dental Association is one per dentist. Even if a ratio of 1 to 2 could be obtained, Virginia would need 900 hygienists. But the number in the state is far below that. There are 63 members of the Virginia Dental Hygienist Association, and the Association estimates that there are no more than 100 hygienists in the state. As far as can be determined, there are only 25 Virginia students in schools of dental hygiene this year, most of them at the University of Pennsylvania and Temple University in Philadelphia. Students can obtain a certificate in dental hygiene in two years, or a bachelor of science degree with a major in dental hygiene in four years. In replying to the survey of the Virginia Dental Association (1965), 593 dentists said that they would employ 69 part-time and 92 full-time hygienists, in addition to ones now employed, if qualified hygienists were available. The Council on Dental Education of the

American Dental Association prefers that the training occur in dental schools, but other accredited colleges and junior colleges may be used.

Dental Technicians

The need for technicians (who do castings and similar jobs) is quite small and a school is scarcely needed to supply this need.

Conclusions

Dental hygienists and dental assistants are needed to supplement and support the work of dentists in the state. The ratio of dentists to population in Virginia in 1964 was one to 2,596, compared to one to 1,712 in the United States. An adequate number of dental assistants and dental hygienists working with the dentists can increase the output of each and can in effect reduce the shortage of dentists. But since there is no approved training course for either assistant or hygienist, the chance of Virginia's meeting the special needs for these personnel is slight.

Recommendations

1. To meet the need for dental assistants, training programs should be established in all the major population centers of the state, preferably in publicly controlled two-year colleges or technical institutes in those communities,or, even better, in the comprehensive community colleges recommended in Staff Report #4. A program for dental assistants should be established at the Medical College of Virginia, primarily devoted to preparing faculty members for teaching in the dental-assistant training curriculums of the community colleges.

2. A program for dental hygienists should be established at the Medical College of Virginia, where dental students can learn to work with hygienists and vice versa.

3. Building space should be provided for the two programs at the Medical College of Virginia. They might be part of a School for Dental Auxiliaries. Space for such a school may be available in the planned addition to the Dental School at the Medical College of Virginia.

4. While the program for dental hygienists is getting under way, the State Council of Higher Education should explore with the Southern Regional Education Board whether places for Virginia students in dental hygiene can be contracted for in schools in the Universities of West Virginia, North Carolina, and Louisville, and the state should provide twenty $500 scholarships per class for persons attending schools of dental hygiene under the regional contracts. West Virginia now accepts 18 out of its 27 students from out of the state; North Carolina none; and Louisville 12 out of 39. Virginia's present 25 students are located - 8 at the University of Pennsylvania, 6 at Temple, and the rest scattered among 7 colleges.[2]

5. Faculty of the Medical College of Virginia should hold seminars for practicing dentists in the use of dental assistants and dental hygienists as soon as the supply of qualified personnel begins to increase.

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2 American Dental Association, Dental Students Register, 1963-64, Chicago, 1964, Table 13.

Dietitians

Dietitians are skilled in nutrition, having completed what is usually a four-year college course and an additional year in an internship approved by the American Dietetic Association. Students completing the approved internships are certified by the Association.

Needs

The need for dietitians in Virginia is critical. Some 50 hospitals in Virginia have no certified dietitians, even though the standards of the American Hospital Association require that a hospital must have a certified dietitian at the head of its dietetic department if it is to be approved. As many as 100 dietitians are needed in Virginia hospitals now, and they are also needed on the staffs of nursing schools and in public schools. Because of the shortages, Richmond is the only public school system which employs certified dietitians. In addition, according to the Dean of Home Economics at Virginia Polytechnic Institute, at least one-fifth of the home demonstration agents in the state should have a degree in dietetics.

The production of dietitians does not nearly meet this need. Virginia Polytechnic Institute and Madison College both have programs in nutrition and institutional management which would qualify graduates for the dietetic internships, but only a handful are graduated each year - three or four from Virginia Polytechnic Institute and two or three from Madison College. In 1964 there were only eight students majoring in dietetics in the colleges of Virginia. Not long ago, twice that number of students majored in dietetics, but the number has declined since the state scholarships for teachers were established. Students who otherwise might have been interested in entering the field of dietetics have been diverted into the teaching of home economics or nutrition, for example.

The Medical College of Virginia has the only approved internships in the state. It has twelve. Even though it gives preference to Virginia students, it attracted only two Virginians for the twelve internships in 1964-65. The Medical College finds that the shortage is so great that it has vacant positions for three dietitians itself.

The problem is not with too few facilities. Virginia Polytechnic Institute could easily train four or five times as many undergraduate majors in dietetics as it now trains with the same facilities. Madison College also could do considerably more than it is doing - if it received the students.

Virginia Polytechnic Institute expects to establish, with the approval of the American Dietetic Association, a cooperative program in dietetics, which will include twelve academic quarters interspersed with four work quarters. By this change, the college can compress the five years normally required to complete the college course and the required internship into four calendar years.

The role of the dietitian in relation to health is so clear that the State of Virginia should take steps to increase the number of students in the field of dietetics. Virginia Polytechnic Institute should be encouraged in its experimentations with the cooperative program, but that of itself will not attract sufficient persons to make full use of the present undergraduate programs or the internships of the Medical College.

Recommendations

1. State scholarships for dietitians modeled after the state teacher scholarships already operating should be established. As many as 20 of $500 each might be established the first year, and continued at that level until it became clear that more were needed. Like the teacher scholarships,

these could be repaid by service in public institutions. Such a program would require $10,000 the first year, rising by that amount for each of the three succeeding years as new classes entered.

2. Programs for dietary aides should be established in the comprehensive community colleges that have been recommended in Staff Report #4. The aides, working within sharp boundaries and under supervision, could assist greatly in relieving the dietitians of some of the night hours they are required to work in this time of shortage. The aides could supervise the preparation and serving of approved diets, and order food within those limits.

3. The number of undergraduate programs or the number of approved internships for dietitians should not be increased until the need for expansion is clearly demonstrated by demands of Virginia students.

4. The entrance salaries of dietitians in state service should be raised by at least as much as one grade, in order to attract more persons into the field.

Hospital Administrators

There is one school for hospital administrators in Virginia - at the Medical College of Virginia. It is entirely a graduate program, and admits students with bachelor's degrees who have gained a "B" grade average in their undergraduate major. The school receives some 600 inquiries about admission each year. Of these, over 100 applications are completed, out of which from 15 to 18 students are admitted each year. The school accepts almost all the applicants it considers qualified for the study.

In the United States there are 18 schools of hospital administration which are members of the professional association. Together, they graduate some 270 students a year with master's degrees. The Medical College graduates about 15 or 16 students a year, some 5 to 6 per cent of the national total.

The admission policy of the Medical College favors Virginia students, but less than half of its graduates are from Virginia. In 1965, there were four Virginia students out of 16 graduates; in 1964 the comparable figures were 7 out of 15. All graduates of the School are placed without difficulty.

Almost two-thirds of the hospitals in Virginia employ graduates of the Medical College's School of Hospital Administration. One-third of the graduates remain in Virginia. Over the past 10 years, 157 students were graduated. Of these, 55 remained in Virginia, 17 are in Florida, 14 are in North Carolina, and the rest are scattered in the other states.

Recommendations

1. The School of Hospital Administration at the Medical College of Virginia performs a distinct and useful service for the state. Its support

should be continued.

2. No other school of hospital administration should be established within the foreseeable future.

Medical Technologists

Medical technologists function in the laboratories of hospitals, public health agencies, pharmaceutical manufacturers, and sometimes physicians' offices. They perform various chemical, bacteriological, and microscopic tests at the direction of physicians who are attempting to diagnose the cause of disease or to measure its progress or arrest.

Needs

There are too few medical technologists - they cannot be trained fast enough to meet the demand. It is estimated, for example, that the need in Virginia is for perhaps 2,000 medical technologists, but there are only about 800 in the state. There are approved schools at 11 hospitals in Virginia, which draw students from 8 affiliated colleges. These schools, on which most of the hospitals in Virginia depend, produce only about 50 medical technologists a year. This number is insufficient to meet the need of replacements caused by turnover, let alone satisfying the needs caused by the expansion of laboratory tests. The number of laboratory tests has doubled in the last five years alone, and hospital beds and outpatient visits have increased at the same time. Growth of the laboratories has been almost astronomical.

Shortages increase turnover, because the medical technologists who are present must carry double and sometimes triple loads. Overtime demands are common. Ninety hours of work a week is not unheard of; 60 hours a week is frequent. Such hours are obviously difficult for the technologists.

Program

Medical technologists are trained through three years of college work followed by a year of training in a laboratory approved by the American

Society of Clinical Pathologists. At the end of the fourth year, the technologist receives a bachelor's degree from the college where the first three years of work was completed. The eleven hospitals in Virginia that provide the fourth year of training are fairly well distributed throughout the state and include the hospitals of the Medical College of Virginia and the University of Virginia. Graduates become certified and approved for work in all states by passing the National Register Examination. They are then awarded the title Certified Medical Technologist.

Conclusions

Medical technology is a field of considerable shortage, but the solution lies more in attracting students than in increasing the number of schools. For example, the University of Virginia now has six students in this curriculum. It expects to increase the number to 15 by adding space and one faculty member. If other schools can increase correspondingly, the number of graduates will rise from 50 to 150 each year. This number, with the addition of Certified Laboratory Assistants, who are high school graduates trained through one year of laboratory work experience, will give the state an opportunity to meet its expanding needs in this field.

Recommendations

1. The number of students entering programs in the state for medical technologists must be increased by three times, at least. Recruitment programs such as that conducted by the Health Careers Committee of the Virginia Council on Health and Medical Care will be helpful. In addition, the field must be made more attractive.

2. Salaries of medical technologists should be substantially increased.

3. Working conditions must be improved.

4. Use of Certified Laboratory Assistants should be expanded, but not beyond the point where they can be adequately supervised at all times nor as a substitute for the Certified Medical Technologist.

Nurses

Of all the health-related fields in Virginia, nursing is the most complex and critical. It is complex, for the educational means of satisfying the needs for nurses lies in schools of practical nursing, functioning as parts of vocational education programs; in hospital schools of nursing, operated and financed by the hospitals themselves; in two-year programs in colleges leading to associate of arts degrees; and in four-year programs in colleges and universities leading to bachelor's degrees. Beyond the bachelor's degree lie programs leading to the master's and doctor's degrees. A graduate of a pratical nursing school must qualify for a license through the State Board of Examiners of Nurses and become a Licensed Practical Nurse before she can practice. Graduates of the other programs are qualified to take the examination for Registered Nurse, and if successful, they can write R.N. after their names as witness of their competence to practice. After licensing or registration, most of the nurses practice in hospitals, where the duties of the various kinds of nurses may overlap as emergencies arise. A Licensed Practical Nurse can execute some nursing duties, but not all of them. But any one with an R.N. is presumed to be qualified to execute all nursing functions. Nurses are employed in many settings - in hospitals, public health programs, private duty, nursing homes, physicians' offices, industry, and the armed forces, among others.

Needs

If nursing is complex, it is also a field of critical shortage. No one knows precisely how many nurses are needed in Virginia for the variety of settings in which they practice. But the stories of shortages are legion, and shortages of nursing graduates cause resentment and even bitterness among physicians, nospital administrators, older nurses on whom the burden of the shortages fall, and especially among patients. One estimate of national need, reported by the Virginia Council

on Health and Medical Care is that 130,000 nurses are needed immediately.[3] If Virginia's shortages are comparable to her population, the state would need 2,600 nurses immediately, or about 25 per cent more than she now has. And that figure does not look forward to increases in population, or Medicare, or greater use of hospitals, or a more prosperous state whose citizens can purchase greater amounts of health care. The State Board of Examiners of Nurses finds the causes for the great increase in demands for nursing service in population increases, health insurance and government health programs, health education, increased life spans, and changes in cultural patterns which raise the expectations of citizens for health services.[4] None of these causes is likely to lose its effect within the near future. In fact, it is much more likely that each will intensify its impact.

The shortages of nurses are so patent that it is hardly necessary to search for arguments to support the statement. A physician on the staff of a southwest Virginia hospital stated without reservation that hospital care in his area is not as good now as it was several years ago because of the shortage of nurses. The Director of Nursing at a large teaching hospital estimated that the hospital could use twice as many Licensed Practical Nurses (LPN's) as it now had. The head of one program leading to the baccalaureate degree said that all graduates of that school could be employed immediately by the hospital which provided the major portion of the clinical

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[3] Facts About Health Careers, Richmond, Virginia, September 1964.

[4] Report from Virginia State Board of Examiners of Nurses to State Council of Higher Education, Exhibit IX, Richmond, Virginia, August 1964.

training. With these kinds of testimony, the fact of nursing shortage is indisputable. If it is to be met, the training programs through which nurses receive their competence must find ways of increasing their output, or new methods of training must be found.

Practical Nurses

The profession of nursing and the schools of nursing - vocational, hospital, and university - have been aware of the critical nature of the shortages and have been working steadily toward reducing it. The whole development of the licensed practical nurse program has been focused on reducing the shortages of professional nurses by allowing the less skilled and more routine aspects of their jobs to be executed by the practical nurses. According to State Board figures, 4,117 practical nurses were employed in Virginia in 1964, up from 3,681 in 1963. And the number who were able to pass the examination on the first try is impressive - 445 out of 482. The contribution of the practical nurses to solving the nursing shortages has been substantial and will continue to be. Virginia in 1964 had 32 schools of practical nursing, and they enrolled 845 students. In 1963, 27 schools enrolled 753. The increase amounts to something over 12 per cent, for the one year. Although vocational programs, like the practical nurse training programs, are not within the concern of the present study, institutions of higher education cannot meet the nursing requirements by themselves. The program for practical nurses has allowed the colleges and universities to concentrate on other aspects of the nursing profession.

Registered Nurses

The registered nurses, or professional nurses, comprise the bulk of the nursing profession and fill all its leadership positions. Students

qualify for registration examinations in one of three ways: - through three years of training in a hospital nursing school, which results in a diploma; through four years of training and education in a college or university, which results in a bachelor's degree; or through two years of training and education in a college, which results in an associate degree. Each of these courses has its unique uses. Strictly speaking, the hospital school is outside the purview of this survey for hospitals are normally not considered to be institutions of higher education. But none of the rest of nursing education can be considered apart from the contributions which the hospital schools have made and are making. Some comments on them are necessary.

Hospital Schools

Hospital schools of nursing, or "diploma programs" in the language of the profession, are the oldest of the organized methods of training nurses, and remain the most productive in terms of numbers. Eight hospital schools of nursing were established in Virginia before 1900. St. Luke's Hospital School in Richmond was established in 1886, Hampton Training School for Nurses in 1891, Norfolk General Hospital School in 1892, the DePaul School of Nursing at Norfolk and the Alexandria Hospital School in 1893, the Petersburg General Hospital School and the Medical College of Virginia Hospital School in 1895, and the Danville Memorial Hospital School in 1897. Most of the hospital schools of nursing were founded before 1920. Their contribution to the profession is unmatched by any other type of training.

Hospital schools, like licensed practical nurse programs, are approved by the State Board of Examiners of Nurses. There are 23 such schools in Virginia, from the northeast at Alexandria to the southwest at Abingdon, and from Clifton Forge on the west to Portsmouth on the east. But the schools tend to concentrate in the centers of population, with five

schools at Richmond, four in the Tidewater area, three at Roanoke and two at Lynchburg, leaving only nine schools for the rest of the state.

The diploma programs in schools approved by the Board have expanded only slightly in the five years from 1959 to 1964. In 1959, there were 28 diploma programs, with admission of 716 students and a total enrollment of 1,724 students. By 1964, the number of programs had been reduced to 23, but these programs admitted 814 students and had a total enrollment of 1,794. In the intervening years, several of the smaller schools had ceased to operate - St. Elizabeth's in Richmond in 1959, Mary Immaculate in Newport News in 1961, Pulaski Hospital School in 1961, St. Philip Hospital School in Richmond 1962, Radford Community Hospital School and Winchester Memorial Hospital School in 1964. One good-size school had been established at Richmond Memorial Hospital in 1961, which by 1964 admitted 30 students and had a total enrollment of 84. As a result, the number of admissions increased substantially, and the total enrollment increased somewhat. In terms of total graduates, the hospital schools will continue to expand, since most of them state that they could accept additional students. The expansion will not be rapid enough to satisfy demand for registered nurses, however, because several factors are working against the expansion of the hospital school.

The most significant of the adverse factors is the cost to the hospital and ultimately, therefore, to the patient. One Virginia hospital school administrator estimated that the net cost of the program to the hospital was $1800 per year per student, after allowing $500 for the contribution which her work makes to the operation of the hospital. One dollar per day per

patient is allocated to the operation of the school of nursing. Most of this cost is maintenance of the student, but the cost of operating an approved school is rising as more is expected of its quality. The number of instructors required and the qualifications they must present are both increasing. Only the larger hospitals can afford the costs. It is significant that in Virginia the closings, with the one exception of St. Philip, which was a special case, are of schools in relatively small hospitals, and the one opening of a new school is at Richmond Memorial Hospital with its nearly 430 beds and bassinets. In 1964, only four hospitals were operating schools that enrolled less than 50 students - two of them in Richmond. The small hospital school seems to be disappearing in Virginia.

There are those who view the decline of the hospital school with alarm. They see no way by which the small hospital can meet its nursing needs without a nursing school of its own, both to supply it with graduates and to provide student nurses who can execute some of the tasks of the hospital while they are learning. Their proposals for reform are several. First, some suggest that hospital schools be subsidized by state funds to offset the increasing costs of operation. Second, they propose that a new classification of nurse be established to cover "bedside nursing."

One administrator, Mr. Roy Prangley of Norfolk General Hospital, has suggested that a new title, Certified Bedside Nurse, and a new examination be established, with recruitment of students from the lower half of high

school graduating classes, and the teaching being the responsibility of registered nurses employed by the hospital for nursing duties.

Although the Plan is intended to help solve the real problem of nurse shortages, it does not appear to contain anything that could not be gained through adding perhaps a year of supervised work-study to the minimum for the licensed practical nurse. By license, the work of licensed practical nurses is restricted to those functions for which they are trained. More LPN's, therefore, would not satisfy the need for registered nurses, although a sufficient number of LPN's would make it possible for registered nurses to spend their full time on the more difficult professional functions for which they are trained.

The need for registered nurses must be met in other ways, and they must continue to be trained to the level of competence required by their increasingly complex duties. The quality of hospital schools must be maintained to make sure that the patients of Virginia hospitals receive the care they deserve. But the numbers of registered nurses must be increased at the same time. Under the conditions already described, it is unlikely that there will be a great increase in the number of hospital schools of nursing. Their enrollments should be increased to capacity wherever possible. That will help, but it will not be sufficient, if the experience over the last five years is any indication of the future. Other parts of the solution must be sought in baccalaureate programs and in associate degree programs.

Baccalaureate Programs

There are four baccalaureate degree programs for educating nurses in the state, which are approved by the State Board of Nurse Examiners. They are located at Hampton Institute, the Medical College of Virginia, Old Dominion

College, and the University of Virginia. The programs are four year, college programs of study, designed to qualify students for the bachelor of science degree and passage of the registered nurse examination. It is expected that graduates of these four-year programs will provide a good part of the leadership of the profession, including personnel for many of the head nurse and supervisor positions. They will also be the nurses who will do much of the instruction of nurses, particularly in college programs, but increasingly in hospital school programs. Richmond Professional Institute has been conducting a bachelor's degree program to which only those already qualified as registered nurses are admitted as students; this curriculum does not require approval by the State Board of Nurse Examiners.

In 1959, there were three baccalaureate programs in Virginia - Old Dominion College did not admit students until 1963. In 1959 these three programs enrolled 300 students. In 1964, the four schools admitted 225 students and enrolled a total of 436, an increase in five years of over 45 per cent. An increase of this magnitude can hardly be expected to continue each five-year period, but it is encouraging that it has occurred. As in the hospital schools, the need is to make certain that the full capacity is used.

Plans are being considered at Radford College for the development of a four-year degree program for the preparation of nurses. The authorities of the College believe the proposed program will attract a sufficient number of students to warrant an economic operation. Such a development would serve an area of the state where there is no collegiate type program leading to the bachelor's degree for nurses. Since relationships with state and national policies on nursing education and with neighboring hospitals on clinical training are bound to be complex, officials of Radford College are urged to study the situation carefully in collaboration with the State Council of Higher Education, the State Board of Examiners of Nurses, and the National League for Nursing before reaching a final decision on establishing the program.

Associate Degree Program

Of the programs for educating registered nurses in Virginia, the type that is least developed is the two-year associate degree program; it is conducted in only three colleges, one of which is giving up the program. The Medical College of Virginia is ending its two-year program in favor of its four-year bachelor's degree program, finding that the two are not appropriate for the same institution. This leaves only the Norfolk Division of Virginia State College and Shenandoah College. The two schools admitted 39 students in 1964 and had enrollments of 72 students. The Medical College of Virginia is giving up an enrollment of 21 students but expects to increase the enrollment in its four-year program by at least as many as it loses from the two-year program. Virginia Intermont College discontinued its two-year program in 1962, finding the costs of operating a program for 40 students with four instructors was too expensive to continue.

The associate degree, two-year program is the newest of the various programs for educating registered nurses, but it has been used extensively in states where junior colleges, community colleges, or technical institutes of college grade have been established. Its greatest development has been in California where it fits into the state system of community colleges. The Kellogg Foundation has been supporting the establishment of two-year programs under the University of Kentucky system of community colleges, where five programs are being begun. Ray E. Brown's study of nursing education in North Carolina came to the conclusion that "North Carolina ... has almost totally ignored one rather dramatic innovation in nursing education for the professional nurse that has become widespread across the nation. To date, only one associate

degree program in nursing education has been established in the entire state."[5] Table 1 confirms a national pattern of development among the three types of programs since 1955, when only 1.0 per cent of students enrolled in professional nursing were in associate degree programs, to 1964 when this percentage had reached 6.0 per cent of total nursing enrollments. Mr. Brown believes that most of the expansion of nursing education must take place in the colleges, and that a great deal of this must come from the associate degree programs established in tax-supported community colleges.

Much the same conclusion can be reached for Virginia. The hospital schools will continue in the larger hospitals but they will have increasing difficulty in meeting standards and justifying costs in the smaller hospitals. Programs for licensed practical nurses will continue to expand, but their graduates cannot fully satisfy the need for registered nurses. The four-year programs leading to bachelor's degrees will also continue to grow in size, but the number of programs will probably increase only slightly. Only the two-year program has the opportunity to grow, and it must be used if the shortages are to be solved.

Programs in the two-year colleges would have the added advantage of relating themselves to the smaller hospitals in various parts of the state. In the smaller cities, the community college could relate itself to several hospitals of its surrounding counties, becoming as it were a regional nursing education program. It could give its students the advantage of working in the smaller hospitals where responsibilities may vary more greatly than in larger, more highly organized, general hospitals. It could attract students to nursing from the immediate locality so that they would not have to pay the expense of room and board away from home, and it could cost no

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5 Brown, Ray E., Report of Survey of Nursing Education in North Carolina, July, 1964, p. 10.

Table 1. ENROLLMENT IN INITIAL PROGRAMS OF PROFESSIONAL NURSING IN THE UNITED STATES AND PUERTO RICO, 1955-1964

Year	Number of Programs	Enrollment							
		Total		Diploma		Associate Degree		Baccalaureate	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
1964, October 15	1,158	129,269	100.0	93,089	72.0	8,513	6.6	27,667	21.4
1963, October 15	1,148	124,744	100.0	93,271	74.8	6,356	5.1	25,117	20.1
1962, October 15	1,136	123,861	100.0	95,278	76.9	4,927	4.0	23,656	19.1
1961, October 15	1,126	123,012	100.0	96,606	78.6	3,860	3.1	22,546	18.3
1960, October 15	1,137	118,849	100.0	94,812	79.8	3,254	2.7	20,783	17.5
1959, October 15	1,137	115,057	100.0	92,899	80.8	2,345	2.0	19,813	17.2
1958, October 15	1,145	113,518	100.0	92,419	81.4	1,904	1.7	19,195	16.9
1957, October 15	1,118	112,989	100.0	92,989	82.3	1,360	1.2	18,640	16.5
1956, October 15	1,115	114,674	100.0	94,920	82.8	1,132	1.0	18,622	16.2
1955, October 14	1,125	114,423	100.0	95,902	83.8	1,084	1.0	17,437	15.2

more, therefore, than the hospital schools of Virginia where the costs to students in many amount to something around $350 a year in tuition and special charges.

In 1964, the total number of professional nurses employed in Virginia was 11,346. In 1959, there were 9,006. In the period 1959-64, therefore, the number of employed nurses in Virginia increased by about 25 per cent. Progress is being made, therefore, but the shortages remain. What is needed is acceleration.

The increases in employed professional nurses do not come from comparable increases in the enrollment of the schools. From 1959 to 1964, enrollment in the schools increased only from 2,145 to 2,323, a gain of 178, or 8.3 per cent. This represents an annual increase of about 1.5 per cent, hardly enough to satisfy the needs of growing population and expanding health care. Virginia has been fortunate in being able to obtain more nurses than it educates. But as the shortages grow more intense throughout the United States, it will not be able to continue to do so.

Master's Degree Programs

One final area remains. Faculty members of approved schools of professional nurses are expected to hold master's degrees in nursing to be fully qualified. Such a standard is very distant for most of the hospital schools. In 1963, only one out of ten of their 180 full-time faculty members held master's degrees. In contrast, 33 out of 46 faculty members in four-year bachelor's degree programs held the master's or doctor's degree, and eight out of 14 faculty members in two-year programs held the master's degree. But the movement toward requiring the master's degree for faculty members of nursing schools is clear enough to make it desirable for Virginia to consider ways of meeting this need.

The alternatives are to establish a master's degree program at one of the institutions now providing a bachelor's degree program, or to encourage nurses to attend programs in other states. The schools at Hampton Institute and Old Dominion College are too small, as yet, to have gained the strength they would need to embark on graduate programs. Both the University of Virginia and the Medical College of Virginia have strong bachelor's degree programs in nursing.

The most detailed study of needs and possibilities of master's degree programs in the State of Virginia, made by Dr. Margaret Gould Tyson, former dean of the School of Nursing of the University of Virginia, as a doctoral dissertation, concluded that "...teachers qualified for appointment to graduate faculties and prepared to teach graduate students are not available, and ... prospective students are not available in sufficient numbers to justify offering a program."[6] Dr. Tyson also pointed out that "...adequate programs are available within a reasonable distance for Virginians."[7] These programs she identified within a 250 mile radius in North Carolina, the District of Columbia, Maryland, and Pennsylvania. She proposed that the state provide scholarship funds to nurses wishing to enter graduate programs in these states. Such appropriations are not as badly needed as they were at the time of Dr. Tyson's study, since federal funds are now offered under the Nurses Training Act for graduate study toward the master's degree.

Dr. Tyson used data collected in 1962. The situation may have changed to some extent by 1965, but probably not radically. Two major universities

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6 Tyson, Margaret Gould, "Preparation of Teachers of Nursing for Virginia" (unpublished Ed.D. dissertation, Teachers College, Columbia University, 1963), p. 98.

7 Ibid.

in the South have suspended any further admission of students to their master's degree in nursing programs; in one of these personally known to the author the action was because of costs and the difficulty of maintaining accreditation. Beginning a graduate program is a major undertaking. Virginia is not ready at this time.

Furthermore, the situations at both the Medical College of Virginia and the University of Virginia contain serious hinderances to establishing master's degree programs in nursing. The functions of nursing are recognized more and more as being based on the social sciences. At the Medical College of Virginia graduate work in the social sciences is limited by the nature of the institution. At the University of Virginia the nursing school currently lacks a dean, and the institution is attempting to conduct both a hospital[8] school and a collegiate school of nursing. Until these situations are resolved, the development of a graduate program would be unwise.

Recommendations

1. Every possible effort should be made by hospital administrators, college officials, and nursing educators to make sure that the quality of educational programs for nurses is sufficiently high to warrant state approval and, where possible, accreditation by the National League for Nursing. Graduates of approved schools are generally successful in obtaining registration through examination. Such schools therefore avoid the social loss contained in the failure of a graduate to qualify for practice.

2. Every appropriate agency in the state should aid in attracting more persons into nurse training and education. The Virginia Council on Health and

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[8] Since this was written there has been an announcement that the University of Virginia is discontinuing its hospital school of nursing.

Medical Care might well give this field priority in its recruitment efforts. Many hospital schools in the state could accept more students than they receive. Only for the coming year of 1965-66 has Old Dominion College begun to receive the number of students it hoped to attract. And the two-year programs at the Norfolk Division of Virginia State College and at Shenandoah College could both add a number of students. The proposed establishment of a four-year degree program in nursing at Radford College should be carefully studied in collaboration with the State Council of Higher Education and appropriate nursing groups. If this program is established, every effort should be made to recruit a suitable number of students for it.

3. The comprehensive community colleges, as recommended in Staff Report #4, should establish two-year associate degree programs in nursing as they organize their curriculums. Such programs of nursing education should be accessible to students in all parts of the state, and particularly to those parts like southwest Virginia where the limited size of the hospitals has made it impossible to continue some of the hospital schools.

4. A program leading to the master's degree for nurses should not be established in Virginia at present.[9] Instead, Virginia should make use of the master's degree programs in nearby states, using funds from the Nurses Training Act to support the nurse-students during their graduate study. If significant numbers of nurse-students cannot be encouraged to obtain their master's degrees in this way, the state should then consider whether a master's degree program should be established at one of the institutions where the bachelor's degree in nursing is offered.

5. A detailed analysis of the needs for nurses in the state with projections for the next ten years should be made under the direction of the Virginia

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[9]A dissenting opinion submitted by a member of the Higher Education Study Commissio is filed in the records of the Commission.

State Department of Health, with the collaboration of the Virginia State Board of Examiners of Nurses, the Virginia Association of Hospital Administrators, the State Department of Education, the State Department of Technical Education, and the State Council of Higher Education. The study should make recommendations on ways in which the efforts of Virginia agencies to solve the nurse shortages can be coordinated.

References on Nurses

"Analysis of Part-time Nursing in General Hospitals" in Hospitals, Vol. 37, No. 17, September 1, 1964.

Brown, Ray E., Report of Survey of Nursing Education in North Carolina, July, 1964.

State Department of Technical Education, A Guide for the Establishment of Technical Colleges in Virginia, Richmond, February, 1965.

Southern Regional Education Board, Planning a Regional Program in Nursing Education and Research, Atlanta, 1962.

State Department of Technical Education, Policies, Procedures, and Regulations Governing...the Program of Technical Education, Richmond, 1964.

State Nursing Training Facilities Act, 1958.

National League for Nursing, Study on Cost of Nursing Education, Part II-Cost of Basic Baccalaureate and Associate Degree Programs, New York, 1965.

Tyson, Margaret G. Preparation of Teachers of Nursing in Virginia (Unpublished doctoral dissertation, Teachers College, Columbia University), 1964.

Virginia State Board of Examiners of Nurses Annual Report for 1964.

Virginia State Board of Examiners of Nurses Report to State Council of Higher Education, August, 1964.

Occupational Therapists

Occupational therapists assist in the rehabilitation of patients with mental or physical illnesses. The objective is to help the patient regain as much ability as possible, to be independent, and able to take care of himself and do useful work. Occupational therapy has become a recognized part of care and cure in mental hospitals.

Needs

Compared to needs in some other professional fields, the need for occupational therapists is not overwhelming. In fact, the one school in Virginia at the Richmond Professional Institute could supply all of Virginia's needs - if its output were retained in Virginia. At present, there are about 50 active registered occupational therapists in Virginia, but there are 17 budgeted vacancies in state agencies alone. A state like Michigan has about 200 registered occupational therapists. If Virginia could attract the five or six therapists it needs in each of its state mental hospitals, it would require 25 more therapists than it now has.

In general, most programs of occupational therapy in the state cannot qualify for internships, even though more internships are needed, because they lack sufficient registered therapists. The program is a four-year college curriculum, followed by a nine-month internship. Only three internship programs are in the state - at McGuire Veterans Hospital, The Richmond Treatment Center for Children, and Woodrow Wilson Rehabilitation Center at Fishersville. Each of these can take three interns. All other students must go outside the state for internships, with the likelihood that they will not return.

Program

The School of Occupational Therapy at the Richmond Professional Institute

has about 100 students, of whom 60 are from outside the state. It is one of 32 accredited schools in the United States. If the 40 Virginia students alone were retained, the needs of the state would be satisfied for the present.

Recommendations

1. Salaries of occupational therapists should be increased. In Virginia, entrance salaries run about $5,200 a year. In neighboring states, they start at $5,500 to $6,000 a year.

2 A state-level position for occupational therapists should be established in the state hospital system. Under the present conditions, it would be very difficult to persuade a graduate to work at Eastern State or Central State Hospitals since, in the absence of a well-organized occupational therapy program, his services could not be used effectively. Perhaps, the state might select one mental hospital - possibly Eastern - and make it a demonstration by building an adequate staff for occupational therapy, and carefully evaluating the results.

3. A pre-occupational therapy program should be developed in the two-year institutions of the state, encouraging students to enter the field and then to transfer to the Richmond Professional Institute at the beginning of the third year. Such a program would increase the number of Virginia students entering the field.

4. The possibility of making the School at Richmond Professional Institute into a regional facility under the Southern Regional Education Board contract should be investigated. At present, at least half of the 100 places in the School could be held for students from outside the state, with no loss to Virginia students. Funds received under such a contract

could be used to strengthen the School and to attract Virginia students through award of scholarships.

Pharmacists

Pharmacists are responsible for compounding drugs prescribed by physicians and often for managing the drugstore in which they practice their profession.

Needs

On July 1, 1964, there were 2,300 pharmacists in Virginia, and 1,700 of these were active. The replacement figure for Virginia runs to about 3.5 per cent of the active pharmacists. It takes 55 to 60 pharmacists a year, therefore, to replace those lost to the profession, without regard to any expansion that may be required because of population growth or greater demand for health services. Virginia seems to have a fairly stable situation, but some states, including Maryland, Pennsylvania, and New Jersey have more pharmacists than they need.

Program

Most of the pharmacists in Virginia are graduates of the one School of Pharmacy - at the Medical College of Virginia. About 1,400 out of the 1,700 practicing pharmacists are graduates of the Medical College. It graduates about 65 students a year, at present a number which meets the needs without creating surpluses of pharmacists. The School supplies most of central Virginia.

The program of undergraduate training is five years in length. The last three years are spent at the School of Pharmacy. The School also has a graduate program, leading to the master of science and doctor of philosophy degrees in pharmaceutical chemistry. It has 12 students studying toward the Ph.D. degree.

The School also undertakes continuing education for pharmacists in an effort to keep them up-to-date on some of the newer drugs. Efforts here could be expanded with profit to the state.

Recommendations

No recommendations regarding preparation for pharmacy seem warranted. The School of Pharmacy at the Medical College of Virginia appears to be satisfying the needs of the profession.

Physical Therapists

Most physical therapists work in hospitals, helping persons with muscle, nerve, and bone ailments and injuries to regain as much as they can of complete functioning. They use a variety of procedures under the direction of a physician - particularly through exercise, mechanical apparatus, and applications of massage, heat, light, electricity, or water. Each hospital with at least 150 beds can benefit from having a physical therapy department.

Needs

Virginia lacks the number of physical therapists it should have. Throughout the state, there are 50 to 60 budgeted vacancies, and at the Medical College of Virginia, which operates the only school in the state, there are seven budgeted vacancies on a staff of fourteen. One hundred ninety-seven physical therapists are registered in the state, but of these only about 160 are practicing.

Program

The School of Physical Therapy at the Medical College of Virginia is a two-year program, accepting students transferring from other colleges at the end of their second year. Upon graduation, the students receive a bachelor's degree and a certificate. The School has a capacity of 50-55 students. It could expand to as many as 70 with additional space and faculty. It will graduate 19 students in 1965. About half of its graduates stay in Virginia, in spite of the fact that most of them must take their internships outside the state. The School hopes to expand the number of graduates to 35 in 1967.

Recommendations

1. The School of Physical Therapy of the Medical College of Virginia

is providing a greatly needed service to the state. Its facilities are obsolete in many respects, however, and it has less space than it had twenty years ago. Its facilities should be improved or replaced.

2. Recruitment efforts should be increased to draw Virginia students into the School, including the establishment of ten scholarships of $1,000 plus tuition for senior students and $800 plus tuition for junior students. By so doing, the state could supplement scholarships now available from the Vocational Rehabilitation Service, on which the School now largely depends to attract students.

3. The classification, physical therapy aides, should be established. Aides could be trained in briefer time to discharge some of the more routine functions now assigned to physical therapists. Such training is not yet recognized by the Americal Physical Therapy Association, but it would be an appropriate curriculum for the comprehensive community college, as recommended in Staff Report #4, when approved.

Clinical Psychologists

In 1960-61, there were 85 clinical psychologists in Virginia out of the 5,888 in the United States, or nearly 1.5 per cent. This percentage approached the relative size of the population of the state compared to that of the nation, and the shortage of clinical psychologists in the state reflects the national shortage. Dr. Arthur Centor, Director, Psychological Services, State Department of Mental Hygiene and Hospitals, says, "There is a very pressing need for the training of Ph.D. clinical psychologists in Virginia." Dr. Austin Grigg, Past President of the Virginia Psychological Association agrees, saying, "The biggest need in Virginia is training in clinical psychology."

Steps are being taken to establish a Ph.D. program in clinical psychology at the Richmond Professional Institute, under a cooperative agreement with the Medical College of Virginia. Boards of Visitors for the two institutions have approved the program, and the curriculum is being planned. Under the proposal, the first two years of the program would be spent at the Richmond Professional Institute and the third largely at the Medical College of Virginia. The internship would be located at the Medical College.

In spite of this definition of need and the plans of Richmond Professional Institute, it is not clear that the Commonwealth of Virginia should at this time embark on a Ph.D. program in clinical psychology. To be effective, such a program should be organized only when all the following criteria are met:

1. A need for clinical psychologists exists or is anticipated.

2. A strong program in experimental psychology leading to the Ph.D. degree is maintained in the department of the institution where the degree in clinical psychology is to be offered.

3. Advanced graduate programs leading to the Ph.D. in fields related to psychology are present or anticipated in the near future at the institution.

4. The institution maintains a faculty in psychology distinguished by its research productivity and by its professional achievements, including professors holding the diplomate in clinical psychology, and, hopefully, some who have been made fellows in the American Psychological Association.

5. The institution manifests a strong desire to undertake the program.

6. Encouragement for the development is received from the Education and Training Board of the American Psychological Association.

7. Adequate physical and clinical facilities are available.

No institution in Virginia meets all these criteria at present.

Recommendation

The State Council of Higher Education should work with any interested institution in aiding it to meet the criteria listed above before a Ph.D program in clinical psychology is submitted for approval.

Radiologic Technologists

Radiologic Technologists are responsible for use of radiation equipment under the supervision of a radiologist or physician. After training, they are registered through a national examination, although they can practice without registration if they so desire.

Needs

The number of vacancies in the state is estimated at between 50 and 60, but the gap between production and need is not great. An additional 10 to 15 graduates a year could probably fill it so long as technologists are permitted to practice without having become registered. If practice were limited to registered technologists, the number produced would have to be increased by 50 per cent in order to meet the need.

Program

Radiologic technologists, after graduating from high school, complete two years of training in hospitals with approved programs. There are 16 schools in Virginia, all approved. About 90 students are graduated each year. The schools could expand their enrollments by at least 50 per cent if they wished, since the limitation is that there be no more than two students for each registered technologist employed. Fourteen of the 16 schools employ 123 registered technologists, making possible 246 students. There is no dearth of applicants. At the Medical College of Virginia, 285 students have applied for the fall term. Sixty of these are eligible and 25 will probably be selected.

Recommendations

1. Some of the larger schools for radiologic technologists should be gradually expanded as applicants and need increase.

2. Smaller hospitals, without schools, should consider setting up scholarships for students who would agree to return to practice as radiologic technologists in these hospitals.

Rehabilitation Counselors

The rehabilitation counselor is a professionally trained specialist counseling disabled persons as a means of guiding them to the best possible physical, mental, social, vocational, and economic adjustment that they can make. The profession was established because of federal legislation in 1955, and remains a largely federally-supported program of education.

Needs

Nationally, the number of graduates of schools of rehabilitation counseling does not come anywhere near meeting the need. Every graduate receives four or five job offers. Washington, D. C., alone has more openings for new rehabilitation counselors than the Richmond Professional Institute graduates in one year. Fortunately, perhaps, the Virginia need is much less. About 30 per cent of all the graduates of the school - 30 out of 113 - have remained in Virginia. As a result, Virginia had only four vacancies for rehabilitation counselors last year. By contrast, West Virginia had 40. Most students in the program at Richmond Professional Institute come from Virginia; graduates are working in 38 states.

Program

The program is a two-year master's degree curriculum, of which 80 per cent is in subjects directly related to rehabilitation counseling. The school at Richmond Professional Institute has 25 full-time students, and about an equal number of part-time students. From federal funds the school receives grants for 20 students a year. Most students are on some kind of stipend.

Recommendations

The State of Virginia is fortunate in being able to meet most of its present needs for rehabilitation counselors through the program at the Richmond Professional Institute. The Institute may wish to consider adding another faculty member to the staff, since the two full-time faculty members have unusually heavy loads to carry in their teaching and administrative responsibilities.

Sanitarians

Sanitarians are mainly employed in public health departments, to investigate conditions of the environment which may be dangerous to health, and to help enforce regulations which have been adopted to improve the health of the community, such as cleanliness of restaurants and hostelries, and harmless disposal of wastes.

Needs

Some 300 sanitarians are working in Virginia. Most of them are graduates of Virginia colleges with a bachelor of science degree. About four new sanitarians with bachelor's degrees are appointed each year. The agencies in the state could use many more - perhaps as many as fifty. There are 10 to 12 budgeted vacancies in state agencies alone.

But the problem of numbers of new appointments is only part of the difficulty. The education of the sanitarians who are appointed has little immediate application to the functions they are expected to perform. An agency will spend as much as $2,000 training a new employee in the areas in which they must be competent in order to discharge their duties effectively.

Program

Virginia does not have a program for the education of sanitarians in any of its colleges. It is possible to add to the standard science programs leading to the bachelor's degree sufficient courses to make the curriculum much more useful in the production of sanitarians.

Recommendations

1. Courses focused on the functions of sanitarians should be established in at least three colleges - Virginia Polytechnic Institute, the

Richmond Professional Institute, and the Old Dominion College - in the junior and senior years. The necessary basic curriculums are already available in these institutions. The specialized courses should be organized with the advice of the public health leaders in the state, but should not be conceived so narrowly that they would be wholly vocational in content. The costs would be small, since for the sharply focused material the colleges could call upon agency officers as instructors or lecturers.

2. State scholarships, applicable to the junior and senior years and comparable to the teacher scholarships, should be established for sanitarians to draw students into the curriculums when they are established. Ten such scholarships a year of $500 each would stimulate growth in the field quickly.

Social Workers

The social worker usually functions in an agency devoted to aiding people to maintain or restore their capacity to live effectively. His work may be in psychiatric or medical settings, or with a child adoption agency, a recreational program, welfare institutions, or many other situations.

Needs

Needs for social workers have expanded explosively since the 1930's when the first Federal Social Security measures were passed. Nationally, social workers are now a profession of some 100,000 members. The graduate programs of social work education since 1937 have been two years of study and work experience beyond the bachelor's degree, leading to a master's degree in social work. The numbers of social workers who graduate with master's degrees cannot come close to meeting the demand. And that demand is bound to increase with the additional federal programs, and older citizenry, and the disintegration of the central core of cities. In recent years, Maryland and Georgia have added schools of social work, as have a number of other states. Each social work school finds that its enrollment is growing, but the total number of graduates is way below the need.

Program

The sole program for social workers in Virginia is located at the Richmond Professional Institute, where a two-year graduate program leading to a master's degree in social work traces its origins to 1917, and is thus the oldest of the graduate programs of the Institute. Until recently, the program has been small. For 1963-64, the enrollment was only 45. Two

years later, that figure will more than double, since the enrollment expected for 1965-66 is between 95 and 100.

Part of the reason for this rapid increase is the fact that the federal agencies and a number of other groups have become so concerned with obtaining an adequate number of social workers that they have been willing to pay for their education. Most students in social work schools - as many as nine out of ten - are recipients of stipends and grants. It is expected that these programs will be continued, probably expanded, so that the schools of social work can expect to receive enough applications to continue to fill them to capacity. In fact, the Richmond Professional Institute expects its enrollment to reach 150 to 160 students within the next ten years.

It cannot hope to expand in this fashion, or even maintain its present situation, unless it can strengthen its program substantially. Richmond papers in May, 1965, reported action of the Board of Visitors of the Richmond Professional Institute in directing the administration of the college to "give highest priority" to maintaining the accreditation of the school of social work. According to the story by Allan Jones, "The Board of Visitors made clear, however, that it intends to see that 'the school of social work shall continue fully accredited.'" Neither the Council on Social Work Education, the accrediting body, nor the Board of Visitors has made any further public comment. But it can be assumed that the Board was reacting to questions raised by the Council.

In commenting on these reports, the Richmond Times-Dispatch on May 31, 1965, had this to say: "It is highly important, not only to Richmond, but to Virginia, that Richmond Professional Institute's school of social work retain its accreditation." The editorial is correct. Loss of accreditation

would be "unthinkable." Federal grants now support five of the nine full-time positions on the staff. These would be removed and other grants withheld if accreditation is lost. The school could hardly be continued, in fact, because it would be shunned by faculty members and students alike.

Studies made by the Richmond Professional Institute School of Social Work Alumni Committee go back to 1961. They noted that the faculty salaries of the Richmond Professional Institute in 1962 were $2,000 - $2,200 below competitive salaries of other schools of social work. In 1964, the alumni group again studied salaries, and proposed a scale more nearly in accord with those of other schools. On the basis of contracts for 1965-66, it found that "the median salaries are still substantially below the proposed median salary scales."

Of the various programs of education in Virginia related to the health fields, the school of social work at Richmond Professional Institute is the one closest to a crisis in its existence. Within only recent days, the school has been granted a one year period in which to meet national accrediting standards.

Recommendations

1. The Board of Visitors must obtain the funds and faculty necessary to continue the accreditation of the School of Social Work of the Richmond Professional Institute, recognizing that a graduate professional school of this sort is inevitably much more expensive than the usual undergraduate courses, and that faculty salaries must be set on a scale that is competitive with other schools of social work, whether the scale exceeds those of other schools in the Institute or not. It has been traditional, for example, that salaries of medical school faculties have not been restricted by the

salaries of faculty members in other schools on the same campus.

2. Since a crisis apparently exists, the Board of Visitors must find ways of allocating additional funds to the School of Social Work for the current year, 1965-66, since funds from the General Assembly will not be available until the beginning of the fiscal year, 1966-67.

3. The Board of Visitors must propose to the General Assembly that sufficient funds be provided Richmond Professional Institute for the biennium to raise the School of Social Work to a quality comparable to that of other schools of its size in the United States. Such a step would mean at least doubling the state funds available to the School of Social Work, as a beginning move - not as an ultimate goal.

4. Once the crisis has been surmounted, and the quality of the School at Richmond fully secured, consideration of desirable future developments should be begun, including expansion of the School to perhaps 160 students, relationships of the School to undergraduate programs throughout the state, provision of instruction in social work in Norfolk, and so on. But these explorations, desirable as they are, should not be allowed to interfere with the immediate task - to so strengthen the School of Social Work at the Richmond Professional Institute that it can be pointed to with pride rather than eyed with anxiety.

Veterinarians

Veterinarians deal with the causes and cure of diseases and ailments of animals, both large and small, as well as such public health concerns as meat inspection and control of diseases transmittible from animals to man. Obtaining a degree in veterinary medicine, the Doctor of Veterinary Medicine (D.V.M.), requires at least two years of college followed by four years of veterinary medical school.

Needs

The need for veterinarians increases as the price of cattle rises and losses are therefore more costly, and as the prosperity of city dwellers grows, making possible greater consumption of meat and wider ownership of pets. The American Veterinary Association has estimated that the number of veterinarians (22,000) must be doubled in the next ten years. Shortages which now exist will become more severe, as population expands.

Program

Virginia has participated in the veterinary medicine contracts of the Southern Regional Education Board almost from the inception of the program. Under that program, twelve Virginia students are admitted to the University of Georgia as first-year veterinary medical students, and places for two students are held at the Tuskegee Institute in Alabama. The Virginia Polytechnic Institute screens applicants in a preliminary way, but the final selection and admission are the responsibility of the veterinary medical schools holding the contracts. It has been possible to fill the quota at the University of Georgia each year. The places at Tuskegee Institute have not been fully used. But the regional program has

the capacity to meet the needs of Virginia until demands rise sharply, if some four out of five graduates return to practice in Virginia. No studies have been made recently of the number returning, but the Southern Regional Education Board is convinced that at least as high a proportion of graduates return as would stay in the state even if it had its own school.

One special problem affects the practice of graduates of veterinary medicine. The course is long and expensive. When students graduate, they are sometimes forced to accept paid positions rather than suffer the slower returns of private practice. Often they lack funds to establish themselves in private practice.

Recommendations

1. The regional programs in veterinary medicine should be continued, even expanding the quotas if possible, and increasing the per student payments if that becomes necessary. For the foreseeable future, the regional contracts should be the basis of training veterinarians for Virginia.

2. Low interest or no-interest state loans should be made available to Virginia students who are willing to return to the state, to help them set up practice. Repayment should be waived at $1,500 a year for each year of practice in the state. The maximum loan should be $9,000.